S3: SVS Plenary Session III

SS10

Why Discordance of the Treatment Received Compared with the Treatment Recommended Results in Worse Outcomes for Peripheral Arterial Disease

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Objectives: Strategies available to facilitate decision-making for patients with peripheral arterial disease (PAD) include a Markov-based decision analysis (DA) model and the Lower Extremity Grading System (LEGS) score, both of which have suggested that outcomes may be inferior when the actual treatment received does not follow that recommended. The purpose of the current study was to examine this discordance and why patients fared worse with discordance.

Methods: Patients referred for symptomatic lower extremity PAD over a 3-year period were evaluated using the DA model and LEGS score. Calculated quality of life (cQOL) values were assigned preoperatively and at follow-up according to symptoms and treatment Results 0.00 (death) - 1.00 (perfect health). Outcomes were compared according to whether the treatment provided matched that initially proposed by the surgeon or predicted by the models.

Results: Among 375 consecutively enrolled patients (median follow-up, 16 months), the cQOL at last follow-up improved from baseline with endovascular (0.23 ± 0.16) or open (0.21 ± 0.17) revascularization more than with amputation (0.10 ± 0.07) or medical therapy (0.04 ± 0.09). The magnitude in cQOL improvement was greatest when the treatment received was concordant with the initial plan of the surgeon ($\kappa = 0.84$, 0.18 vs 0.08; $P < .01$), the DA model ($\kappa = 0.53$, 0.19 vs 0.13; $P < .01$), or the LEGS score ($\kappa = 0.32$, 0.23 vs 0.10; $P < .01$). Patient refusal to follow the surgeon's recommendations and on-going tobacco use were associated with minimal improvement in cQOL (ranges. 0.05-0.07 and 0.00-0.02, respectively), whereas the decision to pursue a less morbid therapy was associated with substantial improvement in cQOL (range, 0.28-0.38).

Conclusions: Mean cQOL improved most when the treatment received matched that proposed by the surgeon or predicted by the models. Patient refusal to follow the therapy recommended as well as the strategy not to revascularize claudicant patients who persist in smoking were associated with significantly less patient benefit.

Author Disclosures: T. E. Brothers: Nothing to disclose.

SS11

Geometric Remodeling of Vein Bypass Grafts and the Impact on Graft Failure

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Objectives: The risk factors for vein graft (VG) failure are well established, but the underlying mechanisms are poorly understood. This study used high-resolution, sequential mapping to identify factors controlling VG remodeling.

Methods: VG patients (n = 56) were prospectively recruited and underwent computed tomography imaging at 1 week, and at 1, 6, and 12 months postoperatively. VGs were digitally reconstructed, and lumen areas were calculated at 1-mm intervals, followed by segmental analysis.

Results: VG remodeling was highly dynamic with substantial spatial and patient-to-patient heterogeneity (Fig). Distinct temporal phases in the remodeling response were observed (change in lumen cross-sectional area: −5.5% (early) vs +1.3% (late); $P = .03$). Small diameter VGs (area <15 mm^2) demonstrated enhanced outward remodeling ($P = .002$), consistent with a shear-driven adaptation response. Of 56 VGs, 12 (21%) failed ≤12 months, and maladaptive early (1 week-1 month) remodeling in regions of stenosis were predictive of VG failure ($P = .03$). Impaired remodeling was observed in the anastomotic regions of composite VGs ($P < .001$); no remodeling differences were noted in arm vs leg VGs or outflow location. Cilostazol use was associated with marked outward remodeling in all phases of VG adaptation ($P = .005$); warfarin and Plavix had no effect on this response. Race (black vs

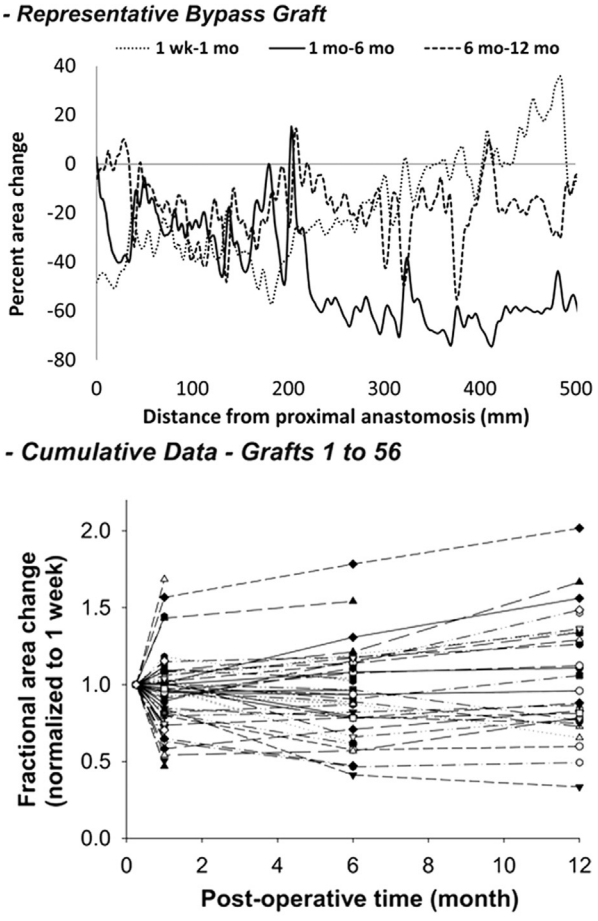

Fig. Dynamics of vein graft cross-sectional area changes after implantation. Graphs of individual and cumulative patients demonstrate the significant temporal and spatial heterogeneity in these remodeling events.